Chapter 33. Construction Safety

33-1 General. The Mike Monroney Aeronautical Center (MMAC) Construction Safety program has been developed to protect MMAC employees, contractors, visitors, and students from workplace incidents related to construction activities. This chapter establishes work requirements, procedures, and standards that construction contractors and related providers must comply with while working on the MMAC campus.

33-2 Scope. This chapter applies to all personnel working on and near construction projects or whose responsibilities impact construction activities on the MMAC campus.

33-3 References. All MMAC construction, renovation, and related activities must comply with the Occupational Safety and Health Administration's (OSHA) Safety and Health Regulations for Construction, 29 CFR 1926, and other applicable industry standards. This includes, but isn't limited to:

a. 29 CFR 1926, Safety and Health Regulations for Construction.

b. ANSI A92.2, Vehicle Mounted Elevating and Rotating Aerial Devices.

c. ANSI A92.3, Manually Propelled Mobile Ladder Stands and Scaffolds.

d. ANSI A10.8, Safety Requirements for Scaffolding-American National Standard for Construction and Demolition.

e. ANSI A92.6, Self-Propelled Elevating Work Platforms.

f. ANSI B30.5, Mobile and Locomotive Cranes.

33-4 Definitions.

a. **Excavation.** Any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal.

b. **Scaffold.** Any temporary elevated platform and its supporting structure used for supporting workmen or materials or both.

33-5 Roles and Responsibilities.

a. **MMAC Top Management.** Top Management must ensure that all organizational programs and projects address construction safety requirements, where applicable.

b. **Environmental, Occupational Safety and Health (EOSH) Staff of the Facility Services Division (AMP-100) of the Office of Facility Management.** The EOSH Staff must:

1) Inspect all major construction sites at the MMAC at least once per week.

2) Provide technical assistance and ensure compliance with this chapter.

c. **Operations and Maintenance Division (AMP-300) of the Office of Facility Management.** AMP-300 must:

1) Ensure that contractors performing construction, renovation, repair, and related activities required by AMP-300 comply with applicable portions of this chapter.

2) Establish a contractor selection protocol that ensures all contractors are reputable and safety conscious.

d. **Architecture and Engineering Division (AMP-400) of the Office of Facility Management.** AMP-400 must:

1) Ensure that contractors performing construction, renovation, repair, and related activities required by AMP-400 comply with applicable portions of this chapter.

2) Establish a contractor selection protocol that ensures all contractors contracted are reputable and safety conscious.

e. **MMAC Supervisors.** MMAC supervisors must:

1) Ensure that all employees under their supervision understand applicable rules, roles and responsibilities related to construction safety.

2) Ensure compliance with this chapter.

f. **MMAC Employees:** MMAC employees must:

1) Comply with all applicable provisions of this program.

2) Adhere to all warnings, signs and barricades in and around construction areas.

3) Not enter construction areas unless specifically authorized.

4) Report any hazardous or questionable activities to the EOSH Staff at 954-3503.

g. Contracting Officers (COs) and Contracting Officers Representatives (CORs). COs and CORs must:

1) Ensure that all contractors follow applicable OSHA regulations and MMAC policy regarding construction.

2) Incorporate construction safety requirements into contract documents to ensure that contractor operations comply with the requirements of this chapter.

33-6 Program Elements.

a. **Personal Protective Equipment.** Personal protective equipment (PPE) provides protection when administrative and engineering controls are not feasible or not sufficient. Many construction workers are dependent on properly selected and used PPE for their protection on a daily basis. Where required by work task or hazard, PPE must be selected, donned and maintained in accordance with this program while performing construction, renovation or related tasks at the MMAC. Refer to Chapter 25, Personal Protective Equipment, for additional PPE requirements.

1) Clothing.

a) Full-length pants must be worn by all personnel conducting construction activities.

b) Sleeveless shirts and tank tops are prohibited on construction sites where any welding, torch cutting, and grinding is performed.

c) Synthetic clothing is prohibited on any construction site where welding, torch cutting, and grinding is performed.

2) Head Protection.

a) Head protection is required where any danger is present of impact to the head from flying or falling objects or from electrical burns.

b) Head protection must meet the requirements of ANSI Z89, Safety Requirements for Industrial Head Protection.

3) Eye and Face Protection.

a) Eye and face protection equipment is required when machines or work tasks present the potential for eye and face injuries.

b) Eye and face protection must meet the requirements of ANSI Z87.1, Eye and Face Protection.

4) Hearing Protection.

a) Personal hearing protection shall be required where engineering or administrative controls are not feasible, are not practical, or fail to reduce noise exposures below 85 dBA. Refer to Chapter 21, Hearing Conservation Program, for additional hearing protection requirements.

b) Workers must not be exposed to noise over 140 decibels without the use of hearing protection (e.g., powder actuated tools).

5) Foot Protection.

a) Foot protection is required when workers are working in areas where there is potential of foot injuries from falling objects, rolling objects, piercing sole, and electrical hazards.

b) All footwear must comply with ASTM F2413, Standard Specification for Performance Requirements for Foot Protection.

6) Respiratory Protection.

a) Respirators are required when respiratory hazards are present.

b) Employers must have a written program complying with 29 CFR 1910.134 as referenced by 29 CFR 1926.103 when their employees require use of respirators for protection. See Chapter 20, Respiratory Protection, for additional information.

b. **Fire Protection.** All construction activities must provide an adequate level of fire protection to prevent damage to property or personal injury. Additional fire protection requirements can be found in Chapter 24, Fire Prevention.

1) Emergency Notification.

a) Contractors must ensure that workers are familiar with MMAC emergency notification procedures (See Chapter 3, Workplace Emergencies).

b) Employers must ensure that workers have the means to activate emergency response (e.g., cell phones, two way radios).

2) Means of Egress.

a) Exits must be arranged and maintained to allow free, unobstructed egress from a building or structure.

b) Exits must be marked with readily visible signs.

3) Housekeeping. Combustibles and scrap debris must be removed from buildings at the end of each workday. Scrap debris will not be repositioned in locations that would create hazards to personnel traveling throughout the center.

4) Smoking.

a) Smoking is prohibited within all buildings at the MMAC.

b) Smoking is prohibited outdoors in courtyards and within 25 feet of doorways and air intake ducts in outdoor spaces.

c) Smoking is prohibited near operations and materials that represent a fire hazard.

d) Fire hazards must be marked with conspicuous signage stating “No Smoking or Open Flame.”

5) Heating Devices.

a) Heating devices must be kept clear of all combustible materials. A clearance of 36 inches for radiant heaters and 12 inches for circulatory heaters must be maintained.

b) Petroleum-burning space heaters are prohibited indoors and in enclosed areas.

6) Fire Extinguishers.

a) Fire extinguishers with a minimum rating of 2A must be provided for every 3,000 ft^2 of construction area. Additionally, a travel distance of no more than 100 feet may exist from any one point to an extinguisher.

b) At least one extinguisher per story of construction must be provided.

c) Fire extinguishers (with a rating of 10b) must be provided within 50 feet of five gallons of flammable and combustible liquids or within five cubic feet of flammable gas.

7) Hot Work Permits. Hot work permits are required when any flame, heat, spark or smoke producing operations are conducted in areas not specifically designed for these operations.

a) All hot work activities conducted by construction contractors must be coordinated with either AMP-300 or AMP-400.

b) Hot work sites must be prepared for hot work activities in accordance with Chapter 24, Fire Prevention.

c) Hot work permits must be approved and posted before beginning work.

d) Fire Watch. Most fires associated with hot work occur when a spark smolders in an unseen location. To prevent fires resulting from the hot work activities at the MMAC:

i. A person other than the operator must perform fire watch duties and remain at the work site for at least 30 minutes after hot work operations have ended.

ii. Fire watch personnel must be capable of adequately performing fire watch duties. Basic duties capabilities include the principles of fire extinguisher use; methods of recognizing fire hazards with techniques for removing and guarding against them; and emergency notification and evacuation procedures.

iii. Access to alarms, cell phones or two-way radios must be maintained throughout the duration of the fire watch.

iv. Additional fire watch personnel must be used when exposure potential exists to adjoining areas.

c. **Roof Work.**

1) All roof work repairs and renovations must, at a minimum, comply with 29 CFR 1926.502, Fall Protection Systems Criteria and Practices.

2) Roof work is prohibited between the roof edge and warning line without workers being protected by guardrails, fall arrest, or fall restraint at the MMAC. This prohibits the use of the “monitor system” as fall protection.

3) Debris, tools, and other materials must be secured to prevent them from being unintentionally blown or dislodged from the roof.

4) Precautions must be taken to protect personnel below roof work from falling debris, tools and other materials.

5) High wind increases the hazards associated with roof work. The following precautions must be taken to protect contractors and FAA personnel.

a) All roof work is prohibited when winds are a sustained 23 mph or more or when wind gusts exceed 35 mph.

b) Roof work involving rolls of felt or tar paper is prohibited when wind is a sustained 17 mph or more or when gusts exceed 26 mph.

c) Roof work involving multi-layers of lightweight materials is prohibited when wind is a sustained 17 mph or more or when gusts exceed 26 mph.

d) Roof work involving the laying of sheet materials is prohibited when wind is a sustained 17 mph or more or when gusts exceed 26 mph.

e) Chemical used to perform roof work should be monitored to prevent infiltration of building HVAC systems.

d. **Scaffolds.**

1) Scaffolds must be constructed, erected, and maintained in accordance with 29 CFR 1926.451, Scaffolds-General Requirements.

2) Only competent personnel may perform scaffold erection.

3) Fall protection is required for scaffolding equal to or greater than ten feet high unless guardrails over 38 inches high are in use (See Chapter 10, Fall Protection).

4) Hardhats must be worn by workers on and around the scaffold.

5) Scaffold loads, including tools and other equipment, must be kept to a minimum and removed when not in use and at the end of each shift.

6) Personnel must not use scaffolds during high winds, rain, snow, or bad weather.

7) Parts, tools and equipment on a scaffold must be secured before moving a scaffold.

8) Scaffolds must not be moved with personnel on the scaffold.

9) Heavy tools, equipment, and materials must be hoisted up, rather than carried up by climbing personnel.

10) When working on or near electrical hazards, scaffolds must be erected at minimum safe clearances in accordance with Chapter 34, Electrical Safety.

11) Prior to each shift and prior to the initial use, a competent person must inspect the scaffold.

e. **Medical Services and First Aid.**

1) Medical and first aid services must, at a minimum, comply with 29 CFR 1926.50.

2) Contractors must ensure that workers are familiar with MMAC emergency notification procedures (See Chapter 3, Workplace Emergencies).

3) Contractors must ensure that workers have the means to activate emergency response procedures (e.g., cell phones, two way radios).

f. **Excavations**.

1) All workers inside of excavations must be protected from cave-in by a protection system that complies with 29 CFR 1926.652.

2) Cave-in protection is not required for excavations under four feet in depth if there is no potential of cave-in.

3) A competent person must be present when employees are in excavations.

4) Shielding must be within two feet of the bottom of the excavation.

g. **Hazardous Energy Control (Lockout/Tagout).**

1) All hazardous energy control must comply with 29 CFR 1926.416, 1926.417; Chapter 13, Hazardous Energy Control; and the provisions of this chapter.

2) Controls of deactivated equipment and circuits must be plainly tagged and marked to identify what equipment or circuits are being worked.

3) Tags must be attached at any point were reenergization can occur.

4) Equipment and circuits that are deenergized must have the controls rendered inoperative prior to beginning work (e.g., lockout locks, disassembly).

5) Prior to work initiation, the contractor must verify that all circuits that may be contacted during the course of work are deenergized.

6) A copy of the applicable hazardous energy control plan, as submitted with the contract, must be retained on site while conducting work actitivities.

7) Appropriate devices, equipment, procedures and training must be provided to employees in order to control hazardous energy. The MMAC does not issue lockout/tagout equipment or provide training for contractors.

h. **Exposed Electrical Circuits**. Construction contractors must:

1) Comply with the contractual provisions for an electrical safety program that meets or exceeds FAA, NFPA, OSHA, and the requirements of AC Order 3900.21f, Chapter 34, Electrical Safety.

2) Ensure that guarding used to protect workers against energized circuits is adequate and designed for that use.

3) Retain a copy of the applicable electrical safety program as submitted with the contract on site.

4) Provide appropriate safety equipment and training for their employees.

5) Avoid exposure to electrical conductors and parts that are energized or have the potential to become energized. Observe safe work practices, including the proper use of PPE, and comply with all OSHA safety and health requirements.

6) Inspect and maintain all equipment according to the manufacturer's instructions and OSHA regulations. Take all defective equipment out of service and report the removal immediately to the COR.

i. **Confined Spaces**. Construction contractors must comply with 1926.21 (b); Chapter 11, Confined Space Entry; and the following while working at the MMAC.

1) Construction contractors must notify the EOSH Staff a minimum of 24 hours in advance of entry into any confined space at the MMAC.

2) Construction contractors must comply with all MMAC confined space permitting, monitoring, and entry procedures. See Chapter 11, Confined Space Entry, for additional requirements.

j. **Lightening.** Construction contractors must cease all outdoor construction activities and seek shelter when lightening-producing storms are within 15 miles of their work site.

k. **Concrete Saws.**

1) Whenever feasible, concrete sawing must be performed using a wet method for dust control.

2) When concete sawing is performed using dry methods, precautions must be taken to protect workers, FAA personnel, FAA property (including vehicles) from concete dust.

33-7 Contracts and Contract Employees. Contractors and subcontractors performing construction, renovation, and construction-related activities on MMAC facilities must comply with all provisions of this chapter.

33-8 - 33-99 Reserved.